subject to Wangaroa.—1826, *A. Cunningham.*—1833, *R. Cunningham.* (Middle Island).—1773, *G. Forster.* Astrolabe Harbour.—1827, *D'Urville.*

Arbor 12—15 pedalis.

514. *A. crassifolia* (*Sol. Ms.*), foliis incrassatis lævibus (in planta juvenili) simplicibus elongato-attenuatis remote dentatis dentato-incisisve, arboris adulti ternatis spathulato-elongatis dentatis obtusis, floribus racemoso-umbellatis terminalibus, caule arborescenti. *Banks & Sol. Ms. in Bibl. Banks* (1769).—A. heterophylla. *Cunn. Ms.* 1826.

New Zealand (Northern Island).—1769, *Sir Jos. Banks.* Shaded woods, on the shores of the Bay of Islands, Wangaroa, &c.—1826, *A. Cunningham.* —1833, *R. Cunningham.*

Horoika, incol. *Arbor* polymorpha, 20—31 pedalis.

BIBLIOGRAPHICAL NOTICES.

Plantæ Javanicæ Rariores, descriptæ iconibusque illustratæ, quas in Insula Java, annis 1802—1818, *legit et investigavit* T. Horsfield, M.D. *e siccis descriptiones et characteres plurimarum elaboravit* J. J. Bennett; *observationes structuram et affinitates præsertim respicientes passim adjecit* R. Brown. Part I.—Allen and Co., Leadenhall Street, 1838.

This is one of the most valuable contributions, not only to our knowledge of the plants of the East, but to Botany in the abstract, which has appeared in this country; for the fruits of Dr. Horsfield's researches in Java have elicited some of those profound observations on structure from Mr. Brown, which are alone sufficient to stamp the work with a classical reputation.

But independent of these contributions from this eminent Naturalist, we view Dr. Horsfield's work with peculiar satisfaction, from the evidence it affords of the sagacity and research of Mr. Bennett, who holds the situation of Assistant in the Botanical department of the British Museum, and who has given ample proof in the work before us of his capacity to follow in the steps of his distinguished principal. It is with no little pride that we hail the dawn of a reputation which is to reflect lustre on our national establishment, for the accuracy and learning displayed by Mr. Bennett have placed him high in the rank of Botanists; and when we consider the advantages of his position, with one of the most magnificent Herbaria and libraries in Europe at his command, and the example under which he has pursued his investigations, we look forward with confidence to his maintaining by scrupulous care and research, and the principle of pure mental integrity, the reputation of the Banksian school, already so eminent by the names of Solander, Dryander, and Brown.

The work consists of descriptions and figures of the more interesting plants selected from an Herbarium of 2196 species, collected by Dr. Horsfield in Java between the years 1802 and 1818. This indefatigable naturalist, whose labours (we say this with a distinct recollection of his important publications on the zoology of Java) can only be fully appreciated by those who have seen his vast collections in the Museum of the East India Company, and who is endeared to us by his intimate association with the late lamented Sir Stamford Raffles, and by his extensive acquirements in all departments of natural history, is one of the faithful servants of a company, which, through the spirit communicated to its officers, has certainly been more honoured by men of eminence in its employment, than we believe has ever fallen to the lot of any other government in ancient or modern times. We doubt if an equal number of adventurous and faithful contributors to the stock of human knowledge in all its departments, to those which for a long succession of years have reflected imperishable honour on the East India Company, can be found in the records of any other service. When among many others we allude to the names of Jones, Wilkins, Marsden, Colebrooke, Raffles, Elphinstone, Malcolm, Roxburgh, Hamilton, Hardwicke, Wallich, Horsfield, Royle, men who, in the discharge of important public duties, found time to devote themselves successfully to literature and science, and whose labours have been fully appreciated by the learned in all countries, we cannot but attribute the spirit which animated them to the liberality and encouragement of the Board of Directors of the East India Company. Dr. Horsfield's work, from the beauty of its illustrations and the copiousness of its text, will rank with the splendid publications of Humboldt, Martius, Blume, Wallich, Royle, and we only regret that it is to be limited to the particular description of fifty species. The first part contains twenty-five plates, and one hundred and four pages of letter-press, the greater part of which we owe to Mr. Bennett; and in the rapid analysis which we subjoin, we regret that we cannot enlarge upon several of his observations, especially those on grasses under *Ataxia, Sclerachne* and *Polytoca*. We refer to the work itself for these important articles, and those on *Podocarpus, Antiaris, Pouzolzia,* and *Gunnera,* for proofs of the labour bestowed by Mr. Bennett in his researches.

In the first article, the subject of which is the *Polypodium* (*Dipteris*) *Horsfieldii,* R. Br., Mr. Brown reduces Professor Reinwardt's genus *Dipteris* to the rank of a subgenus of *Polypodium,* comprising the species here figured, and *Polypodium* (*Dipteris*) *Wallichii.* He remarks on the necessity of subdivision in this very extensive genus,

now consisting of about three hundred species, and observes, that " for such subdivision, not in *Polypodium* only, but in other extensive genera of Ferns, the most obvious as well as the most advantageous source of character, seems to be the modifications of vascular structure, or the various ramifications of the bundles of vessels, or veins of the frond, combined with the relation of the sori to their trunks or branches." This principle of subdivision in Ferns, first employed by Mr. Brown himself in the characters of various genera in his 'Prodromus Floræ Novæ Hollandiæ,' has since been adopted with considerable advantage by several writers on the subject. The subgenus in question agrees with *Drynaria* of M. Bory in the position of its sori at the point of confluence of several veins, but differs from it and from all other groups of *Polypodium* in the dichotomous ramification of its primary veins, which is necessarily connected with the peculiar division of the frond, and forms, therefore, a character of at least equal importance with those on which several groups, of supposed generic value, have been founded. Setting aside this peculiar ramification, there remains no sufficient character to distinguish *Dipteris* from *Drynaria*; and *Drynaria* itself can only be separated from a more extensive section comprehending *Polypodium plymatodes*, &c., by the presence of sterile fronds. From this section Mr. Brown passes to the consideration of an extensive group, also having anastomosing veins, but in which the sori are seated on the apices of one, or occasionally of two or three ultimate ramuli, included in an area, formed by the anastomosing secondary veins. To this section he gives the subgeneric name of *Phlebodium*; and next in affinity to it he places a group, most of whose species have simple fronds, and all of which are natives of America, to which he assigns the name of *Cyrtophlebium*, its primary parallel veins being " connected by transverse arched branches, from the convex upper side of which generally three (and never more than three) upright parallel simple veins arise, terminating within the area included between the proximate transverse arched branches; of these simple tertiary ramuli the two lateral are soriferous, generally below the apex, the middle branch being always sterile." An analogous arrangement, but with some modifications, exists in the real species of *Cyclophorus*, none of which are natives of America. Mr. Brown next proceeds to notice an extensive and strictly natural group or subgenus, the *Lastrea* of M. Bory, the closest affinity of which he states to be " not to any group of *Polypodium*, but to that section of *Gymnogramma*, the division of whose fronds, and the disposition of veins, are exactly similar, and in which the sori form very short lines of like origin." The distinc-

tion between the two being thus reduced to a difference, generally very slight, in the form of the sori, Mr. Brown is of opinion with Dr. Blume that these two tribes cannot be generically separated, and suggests that "the section of *Gymnogramma* referred to should be removed from that genus, and if still distinguished as a genus or subgenus, might receive the name of *Pleurogramma*." With this section *Meniscium* is also manifestly related, as well as that section of *Nephrodium* which M. Gaudichaud has separated under the generic name of *Polystichum*; "an approximation which appears to be confirmed by more than one fern, entirely agreeing in habit, in undivided veins and lateral fructification with this group of *Nephrodium*, but having a short linear sorus with an indusium of corresponding form, inserted by its longitudinal axis in the middle of the sorus." To this group Mr. Brown gives the name of *Mesochlæna*, and observes that "though in general appearance it is abundantly different from *Didymochlæna*, it can only be distinguished from that genus, according to my view of the structure of its indusium, by its simple veins and lateral sori." Some observations follow on "the most extensive but least natural section" of the genus, in which none of the veins anastomose, and of which *Polypodium vulgare* is one of the best examples; and Mr. Brown concludes this branch of the subject by observing: "That subgeneric or sectional characters may in several instances be obtained or assisted from the seeds of this Natural Order is not improbable, and in one case, namely *Ceratopteris* (or *Teleozoma*), including *Parkeria* in the genus, even the generic character appears chiefly to reside in the seeds, which in their unusual size and peculiar marking or striation, entirely agree in all the species of the genus, while in the original species the annulus is nearly complete; and in *Parkeria*, differing from the rest of the genus in no other point whatever, the ring is reduced to a few faint striæ."

In another observation on the same fern, bearing more particularly on structure, Mr. Brown notices two remarkable points connected with the organization of the subgenus to which it belongs. First, "the existence of the complete circle of vasa scalariformia separating the ligneous or fibrous vessels of the caudex into an outer and inner portion," which is also found in the caudex of *Platyzoma*, but not of *Gleichenia*, and in some (probably in all) of the species of *Anemia*. Secondly, the production in *Polypodium* (*Dipteris*) *Wallichii*, of a gum-like pulpy substance, in which the capsules are imbedded, even when fully formed, and the remains of which may be found after the spora are discharged. In the dried specimens this pulpy substance had no appearance of organization, but in the living

plant Mr. Brown suspects it to be minutely cellular, in which state he has observed it to occur in the nascent sori of several species of *Polypodium,* the peculiarity in the present instance consisting merely in its prolonged duration.

The second article relates to another species of *Polypodium* (*P. papillosum,* Bl.), which is described by Mr. Bennett as forming part of the same section with *P. vulgare,* and is chiefly remarkable as the only described species with immersed sori, belonging to that subdivision, and for the extent to which the immersion is carried, the sori "being completely buried within the sac, which forms a mammillary protuberance of considerable height on the upper surface of the frond." Mr. Bennett makes some observations on the differences in venation which occur in this great section; and particularly notices two undescribed species belonging to it as interesting on account of remarkable peculiarities connected with their sori.

The third article has for its subject a grass, formerly referred to by Mr. Brown, in his 'Chloris Melvilliana,' appended to the narrative of Captain Parry's First Expedition, under the name of *Ataxia,* and since introduced by M. Kunth, from the characters there given, into his 'Enumeratio,' with the specific name of *Horsfieldii.* It is described by Mr. Brown as in habit and structure exactly intermediate between *Anthoxanthum* and *Hierochloe,* in conjunction with which it forms "a very natural and well-characterized section, which belongs rather to the tribe *Avenaceæ* than to *Phalarideæ.*" "In all of them," he observes, "the upper valve of the hermaphrodite flosculus has a single nerve occupying its axis, and one of the two stamina is placed opposite to this nerve. The co-existence of these two characters, both of which are remarkable deviations from the usual arrangement in *Gramineæ,* seems to invalidate the hypothesis respecting the composition of the inner valve of the flower of this family. It might, however, be assumed that the median nerve in these genera is formed of two confluent cords, a view to a certain extent supported by the somewhat analogous structure in the corolla of *Compositæ.* It might also be assumed that the stamen belongs to the inner or complementary series, which is rarely developed in triandrous grasses." In connexion with this subject Mr. Brown also notices two remarkable genera found in Abyssinia, the one by Dr. Rüppell, and the other by Professor Ehrenberg; and particularly describes the very singular modification of structure which is found in the former.

With reference to the difference in the number of stamina between the male and hermaphrodite flowers of *Ataxia* and *Hierochloe,* Mr.

Bennett proceeds to examine in detail the various modifications which take place in grasses in the number of these organs, and the relation which these modifications severally bear to the composition of the perianthium as indicated by its nerves. Adopting the well-known hypothesis of Mr. Brown, before referred to, he endeavours to show that "the structure of those grasses, in which deviations occur from the ordinary number of stamina will be found perfectly to accord with this view of the subject, and to afford perhaps some additional arguments in its favour." With this object he passes these deviations in review, noting especially those cases in which a posterior stamen is coincident with a middle nerve in the inner valve of the perianthium; and the rare exceptions in which either of these structures is found unaccompanied by the other, for which exceptions he endeavours in some degree to account.

In the two succeeding articles Mr. Brown characterizes two new genera of grasses, (*Sclerachne* and *Polytoca*) selected to illustrate the close affinity subsisting between *Coix* and *Tripsacum*, in the very gradual transition between which they form two of the intermediate stages. This transition is further assisted by another new genus, *Chionachne*, founded on the *Coix arundinacea* of Willdenow, the distinguishing characters of which are pointed out. Of these several genera Mr. Bennett enters into a detailed comparison, which clearly exhibits the intimate connexion between them, as well as the near relation of *Tripsacum* to *Rottbœllia*. They all belong to Mr. Brown's great division of *Paniceæ*, together with *Zea Mays*, "which is also a nearly related grass, being manifestly allied to *Polytoca*, and one whose Paniceous character is so obvious that it is surprising that it should not long ago have assumed its proper station in that tribe." Such mistakes in natural affinities as have taken place with reference to *Coix*, *Tripsacum*, and *Zea*, Mr. Bennett thinks, can only be attributed "to the want of due attention to the very striking and important character by which the *Paniceæ* are connected together," and which in the further subdivision of the order has been in a great degree neglected and overlooked.

The sixth article illustrates a genus of Grasses, *Leptaspis*, founded by Mr. Brown in the 'Prodromus Floræ Novæ Hollandiæ' on the species here figured, which is the *Pharus urceolatus* of Roxburgh, and on a New Holland species discovered by Sir Joseph Banks. Mr. Bennett shows that the character of this genus has been much misunderstood by later writers, who had had no opportunity of examining either of the species; and points out the differences in structure be-

tween it and *Pharus,* and the modifications that occur in the two species of *Leptaspis* itself.

Next follow two remarkable Orchideous plants characterized by Mr. Brown, of which the first, *Hexameria disticha,* belonging to the tribe of *Malaxideæ* is especially remarkable for the number and mode of attachment of its pollen masses, which are described as "in singulo loculo tres (!), quarum duæ inferiores collaterales, tertia superior, omnes apice acuto affixæ corpusculo septiformi loculum longitudinaliter bipartienti et cum eodem deciduæ." The other, *Phalænopsis,* Bl., (*Epidendrum amabile,* L.) belongs to the tribe of *Vandeæ,* and is singularly interesting on account of the size and beauty of its white odoriferous flowers, the curious structure of its labellum, and the mode of attachment of its pollen masses to the stigmatic gland. To the account here given by Mr. Bennett, we may add that it is the "Visco-Aloes 14ta," of Kamel in Ray's 'Historia Plantarum,' App. p. 34, pl. 20, and of Petiver's 'Gazophylacium,' t. 103, f. 10; and that it has also been recently found by Mr. Cuming in the Island of Luçon.

In the ninth article Mr. Bennett describes a species of *Freycinetia,* a genus distinguished from *Pandanus* by Mr. Brown, and characterized by him in the 'Prodromus Floræ Novæ Hollandiæ,' but only recently named by M. Gaudichaud in the botanical part of M. Freycinet's 'Voyage autour du Monde.' This genus deviates widely in many respects from the true *Pandanus,* with which Mr. Bennett compares or rather contrasts it in various essential points, in many of which it approximates the anomalous genera *Cyclanthus* and *Carludovica.* With respect to the position of the embryo, he corrects an error of M. Gaudichaud, who had both described and figured it as placed at the apex of the albumen instead of at its base. He divides the known species of *Freycinetia,* seven in number, into two sections, corresponding with those of *Pandanus,* in the one of which the pericarpia are simple and equally coherent, while in the other they are collected into partial phalanges, varying in character in the different species.

In an article on *Podocarpus cupressina,* a species first indicated by Mr. Brown in M. Mirbel's paper on the Geography of *Coniferæ,* Mr. Bennett adverts to the peculiar character of the genus as given by Mr. Brown in his 'General Remarks on the Botany of Terra Australis,' and notices the attempt of M. Achille Richard to invalidate the comparison there instituted between *Podocarpus* and *Dacrydium.* He expresses his surprise that botanists should have concurred

in separating these genera from the true pines, and associating them with the yew. "That their true position," he says, "is in the Abietine section of the family was pointed out to me by Mr. Brown when placing in my hands the specimens now described. Not only do their inverted ovula bear the same relation to the supporting scale as in the genera of that group, but we even find in *Araucaria* an analogous structure as regards the confluence of the scale with the envelope of the solitary ovulum. Thus *Podocarpus* might be regarded as an *Araucaria* reduced to a single fertile scale, or at most to three such scales, were it not that in the latter there exists, as far as we are yet aware, but a single envelope of the seed, while in the former its coats are double." Mr. Bennett refers to the structure of the male organs, and especially of the pollen, as confirmatory of this arrangement, the pollen of *Podocarpus* and *Dacrydium* being perfectly identical in structure with that of all the species of *Pinus*, (with the single exception of the Larch,) while that of the *Cupressinæ*, (including *Taxus*) is altogether different and equally remarkable; "the sphæroidal form of its grains, together with the singular mode in which their outer coats are ruptured and thrown off, in consequence of the great capacity for absorbing moisture possessed by the mucous matter surrounding the inner," having been some years ago pointed out to him by Mr. Brown as readily distinguishing that section from the greater portion of the true *Coniferæ*. He then proceeds to notice the successive additions made to the genus *Podocarpus*, which now consists of four or five and twenty species, divisible into four distinct and strictly natural sections, distributed over all the great geographical divisions of the globe, Europe alone excepted, and extending in latitude from the equator to Japan northward, and to New Zealand in the south. These sections he characterizes, and enumerates under each the names of the species referrible to it, as far as they are known to him by his own examination, or by sufficient figures and descriptions.

Bragantia tomentosa, Bl., forms the subject of the eleventh article, in which Mr. Bennett also notices the other species belonging to the genus, and adverts to the more essential modifications occurring in their structure. He refers to the genus *Trimeriza* of Professor Lindley, which he is of opinion cannot be distinguished from *Bragantia*, the characters relied upon for its separation being equally found in the original species to which the latter name was first applied, and being he thinks of too small importance in so limited a group to justify the severing of these from the remaining species. He points out the relations of *Bragantia* to *Asarum*, *Aristolochia* and

Thattea, to each of which it approaches in different particulars of its structure; and gives in a note some additional information on the subject of the latter genus, extracted from the MSS. of Dr. Kœnig, by whom alone it has yet been found.

[We reserve the conclusion of this review for our next Number. —EDIT.]

Icones Avium, or Figures and Descriptions of new and interesting Species of Birds from various parts of the World. By John Gould, F.L.S. Folio. August 1838.

Part II. MONOGRAPH OF THE CAPRIMULGIDÆ.

At the meeting of the British Association in 1837 Mr. Gould was requested to prepare and write a monograph of the genus *Caprimulgus*, Linn., the species of which, from the great accession to their numbers from various parts of the world, were comparatively unknown, while the very singular forms that had been discovered and the curious natural habits of the group rendered its history a subject of considerable interest to the ornithologist. Mr. Gould in the mean time contemplating a voyage to Australia, and having sailed for that land about nine months after the allotment of his task, could only commence the work and have the first part ready to be laid before the meeting of the British Association at Newcastle, which both does ample credit to the talents of its author, and depicts some of the most remarkable forms in the whole range of ornithology. It has been made a continuation of the 'Icones Avium,' the first part of which we noticed in a former number (No. III. p. 223), and the plan adopted has been to figure and describe each species, with the intention of entering into their history and habits, as a prefatory or concluding essay.

Part I. contains beautifully executed lithographic figures of eight species, from which Mr. Gould has made no less than five new generic names. These we cannot criticise until we see the whole of his proposed arrangement. They are *Amblypterus anomalus*, G., a small species, supposed to be found in Demerara, and remarkable for the curved and sickle form of the quill feathers. *Nyctydromus Derbyanus*, G., a South American species, one of those with lengthened tarsi, and which Mr. Gould presumes run much on the ground. Ten species are said to be known of this group. *Semeiophorus* (*Macrodipteryx*) *vexillarius*, G., a very remarkable form and placed here as a subgenus of *Macrodipteryx* on account of the different structure of the wing, the sixth, seventh, and eighth quills gradually lengthening, while the ninth stretches to an enormous length. *Lyncornis cervini-*